WHAT IS CLAIMED IS

1. A method of identifying a compound that modulates the ability of a glycosyltransferase to bind a substrate comprising:

combining a glycosyltransferase, a labeled substrate, and a compound, in a reaction vessel, under conditions known to be suitable for the glycosyltransferase to bind the labeled substrate,

measuring an amount of labeled substrate bound to the glycosyltransferase, and

comparing the amount to a standardized amount to identify a relative increase or decrease in substrate bound glycosyltransferase, thereby identifying a compound that modulates the ability of the glycosyltransferase to bind the substrate.

2. A method according to claim 1 wherein the glycosyltransferase is a GT-A or GT-B, NDP-glycosyltransferase.

3. A method, according to claim 2, of identifying a compound that inhibits the ability of a glycosyltransferase to bind a substrate.

4. A method according to claim 3 wherein the substrate comprises UDP, TDP or GDP.

5. A method according to claim 4 wherein the substrate comprises UDP-GlcNac.

6. A method according to claim 3 wherein the glycosyltransferase is MurG.

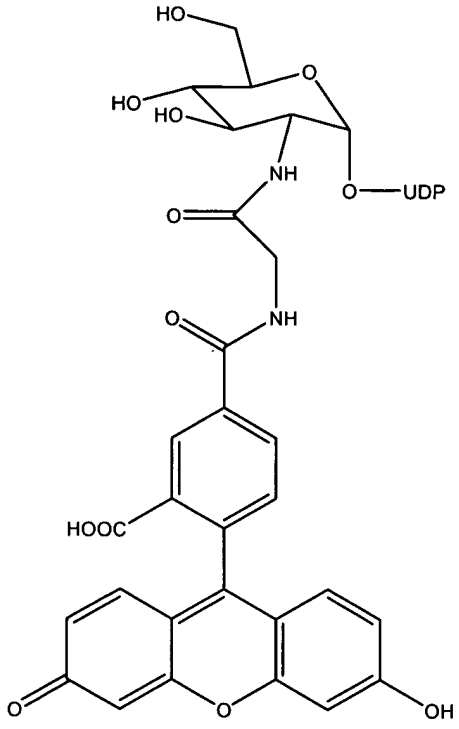
7. A method according to claim 6 wherein the labeled substrate comprises UDP-GlcNac.

8. A method according to claim 7 wherein the labeled substrate comprises a label selected from the group consisting of (a chromophore, a fluorophore, a dye, a radioisotope and an enzyme).

9. A method according to claim 8 wherein the label is a fluorophore.

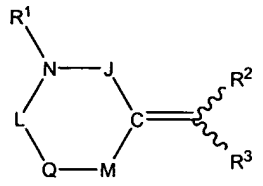
10. A method according to claim 9 wherein the fluorophore is fluorescein.

11. A method according to claim 10 wherein the labeled substrate is the UDP-GlcNAc (hexose donor) analogue:



(F1).

12. A composition comprising an effective amount of a compound of Formula I, or a stereoisomer, or pharmaceutically acceptable salt thereof, that inhibits the ability of a glycosyltransferase to bind a substrate, in a pharmaceutically acceptable carrier,



(I)

wherein:

J is selected from C=O, S, NH, C=S, CH_2, CH R^1, and C R^1R^1;

M is selected from C=O, S, C=S, CH R^1, and C R^1R^1;

L is selected from C=O, NH, C=S, S, CH R^1, CR^1R^1 CHR^2, CR^2R^2, =N-, -C(=NR^1)-, and –C(R^1)=;

Q is absent or selected from –NH-, and –NR^1;

R^1, is selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, F, Cl, Br, I, NO_2, CN, $(CH_2)_rOH$, $(CH_2)_rSH$, $(CH_2)_rOR^{1d}$, $(CH_2)_rSR^{1d}$, $(CH_2)_rNR^{1a}R^{1a'}$, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{1b}$, $(CH_2)_rC(O)NR^{1a}R^{1a'}$, $(CH_2)_rNR^{1a}C(O)R^{1a}$, $(CH_2)_rNR^{1a}C(O)H$, $(CH_2)_rNR^{1a}C(O)NHR^{1a}$, $(CH_2)_rC(O)OR^{1b}$, $(CH_2)_rOC(O)R^{1b}$, $(CH_2)_rOC(O)NHR^{1a}$, $(CH_2)_rS(O)_2OH$, $(CH_2)_rS(O)_2NR^{1a}R^{1a'}$, $(CH_2)_rNR^{1a}S(O)_2R^{1b}$, C_{1-6} haloalkyl, a $(CH_2)_r$-C_{3-13} carbocyclic residue substituted with 0-5 R^{1c}, and a $(CH_2)_r$-5-10 membered heterocyclic system containing 1-4 heteroatoms selected from N, O, and S, substituted with 0-3 R^{1c};

R^{1a} and $R^{1a'}$, at each occurrence, are selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_r$-C_{3-10} carbocyclic residue substituted with 0-5 R^{1e}, and a $(CH_2)_r$-5-10 membered heterocyclic system containing 1-4 heteroatoms selected from N, O, and S, substituted with 0-3 R^{1e};

R^{1b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_r$-C_{3-6} carbocyclic residue substituted with 0-2 R^{1e}, and a $(CH_2)_r$-5-6

membered heterocyclic system containing 1-4 heteroatoms selected from N, O, and S, substituted with 0-3 R^{1e};

R^{1c}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, $(CF_2)_rCF_3$, NO_2, CN, $(CH_2)_rNR^{1f}R^{1f}$, $(CH_2)_rOH$, $(CH_2)_rOC_{1-4}$ alkyl, $(CH_2)_rSC_{1-4}$ alkyl, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{1b}$, $(CH_2)_rC(O)NR^{1f}R^{1f}$, $(CH_2)_rNR^{1f}C(O)R^{1a}$, $(CH_2)_rC(O)OC_{1-4}$ alkyl, $(CH_2)_rOC(O)R^{1b}$, $(CH_2)_rC(=NR^{1f})NR^{1f}R^{1f}$, $(CH_2)_rS(O)_pR^{1b}$, $(CH_2)_rNHC(=NR^{1f})NR^{1f}R^{1f}$, $(CH_2)_rS(O)_2NR^{1f}R^{1f}$, $(CH_2)_rNR^{1f}S(O)_2R^{1b}$, and $(CH_2)_r$phenyl substituted with 0-3 R^{1e};

R^{1d}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, a C_{3-10} carbocyclic residue substituted with 0-3 R^{1c}, and a 5-6 membered heterocyclic system containing 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-3 R^{1c};

R^{1e}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{1f}R^{1f}$, and $(CH_2)_r$phenyl;

R^{1f}, at each occurrence, is selected from H, C_{1-6} alkyl, and C_{3-6} cycloalkyl;

R2 is selected from $(CH_2)_r$-C_{5-10} carbocyclic residue substituted with 0-7 R^{2a}, and a $(CH_2)_r$-5-10 membered heterocyclic system optionally containing C=O and 1-4 heteroatoms selected from N, O, and S, wherein the heterocyclic system is substituted with 0-7 R^{2a};

R^{2a}, at each occurrence, is selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, $(CF_2)_rCF_3$, NO_2, CN, $(CH_2)_rOH$, $(CH_2)_rOC_{1-4}$ alkyl, $(CH_2)_rSC_{1-4}$ alkyl, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{9b}$, $(CH_2)_rC(O)NR^{1f}R^{1f}$ and $(CH_2)_r$phenyl wherein the phenyl on the $(CH_2)_r$ phenyl is substituted with 0-5 substituents selected from F, Cl, Br, I, NO_2, C_{1-6} alkyl, OH, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)OC_{1-4}$ alkyl, $NR^{2b}R^{2b}$, and $(CH_2)_rS(O)_2NR^{2b}R^{2b}$.

R^{2b}, at each occurrence, is selected from H, C_{1-6} alkyl, and C_{3-6} cycloalkyl; and

R3 is selected from H;

alternatively R_2 and R_3 join to form a 5-10 membered heterocyclic system optionally containing C=O and 1-4 heteroatoms selected from N, O, and S, wherein the heterocyclic system is substituted with 0-7 R^{2a}.

13. A composition according to claim 12 wherein the compound is selected from the group consisting of 5-(4-*tert*-Butyl-benzylidene)-3-(4-methyl-piperidin-1-ylmethyl)-2-thioxo-thiazolidin-4-one;

[5-(3-Bromo-5-chloro-2-hydroxy-benzylidene)-4-oxo-2-thioxo-thiazolidin-3-yl]-acetic acid;

2-[5-(1-Benzyl-5-bromo-2-oxo-1,2-dihydro-indol-3-ylidene)-4-oxo-2-thioxo-thiazolidin-3-yl]-ethanesulfonic acid;

5-(5-Bromo-furan-2-ylmethylene)-1-(4-chloro-phenyl)-pyrimidine-2,4,6-tirone;

5-{3-[1-(3-Chloro-phenyl)-4,6-dioxo-2-thioxo-tetrahydro-pyrimidin-5-ylidenemethyl]-2,5-dimethyl-pyrrol-1-yl}-isophthalic acid;

5-{3-[2-(4-*tert*-Butyl-phenoxy)-ethoxy]-benzylidene}-2-thioxo-dihydro-pyrimidine-4,6-dione;

4-{3-[5-(4-Bromo-phenyl)-furan-2-ylmethylene]-2-oxo-5-phenyl-2,3-dihydro-pyrrol-1-yl}-benzoic acid;

3-Azepan-1-ylmethyl-5-(4-methyl-benzylidene)-2-thioxo-thiazolidin-4-one;

2-[5-(4-Chloro-benzylidene)-2,4-dioxo-thiazolidin-3-yl]-*N*-(2-hydroxy-5-nitro-phenyl)-acetamide;

2-[5-(5-Bromo-2-oxo-1,2-dihydro-indol-3-ylidene)-4-oxo-2-thioxo-thiazolidin-3-yl]-3,4-dimethyl-pentanoic acid;

N-[5-(5-Nitor-2-oxo-1,2-dihydro-indol-3-ylidene)-4-oxo-2-thioxo-thiazolidin-3-yl]-nicotinamide;

3-[3-(1-Carboxy-2-phenyl-ethyl)-4-oxo-2-thioxo-thiazolidin-5-ylidene]-2-oxo-2,3-dihydro-indole-1-carboxylic acid;

3-[3-(4-Oxo-5-thiophen-2-ylmethylene-2-thioxo-thiazolidin-3-yl)-propionylamino]-benzoic acid;

2-[5-(1-Benzyl-5-bromo-2-oxo-1,2-dihydro-indol-3-ylidene)-4-oxo-2-thioxo-thiazolidin-3-yl]-ethanesulfonic acid;

[5-(3-Bromo-5-chloro-2-hydroxy-benzylidene)-4-oxo-2-thioxo-thiazolidin-3-yl]-acetic acid;

5-(5-Bromo-3-chloro-2-hydroxy-benzylidene)-2-phenylimino-thiazolidin-4-one;

2-(3,5-Dimethyl-phenylimino)-5-(4-hydroxy-3-methoxy-5-nitro-benzylidene)-thiazolidin-4-one;

{3-[2-(2-Chloro-phenylimino)-4-oxo-thiazolidin-5-ylidenemethyl]-phenoxy}-acetic acid;

2-(2-Chloro-phenylimino)-5-(2-hydroxy-3-nitro-benzylidene)-thiazolidin-4-one;

2-(2-Chloro-phenylimino)-5-(4-nitro-benzylidene)-thiazolidin-4-one;

4-[(2-Methoxy-3,5-dinitro-phenylamino)-methylene]-5-methyl-2-*o*-tolyl-2,4-dihydro-pyrazol-3-one;

3-{5-Oxo-4-[5-(4-sulfamoyl-phenyl)-furan-2-ylmethylene]-3-triflurormethyl-4,5-dihydro-pyrazol-1-yl}-benzenesulfonic acid;

2-Chloro-5-[4-(4-hydroxy-3-methoxy-5-nitro-benzylidene)-3-methey-5-oxo-4,5-dihydro-pyrazol-1-yl]-benzoic acid;

5-{4-[5-(2-Carboxy-phenyl)-furan-2-ylmethylene]-3-methyl-5-oxo-4,5-dihydro-pyrazol-1-yl}-2-chloro-benzoic acid;

5-{3-[1-(4-Chloro-phenyl)-4,6-dioxo-2-thioxo-tetrahydro-pyrimidin-5-ylidenemethyl]-2,5-dimethyl-pyrrol-1-yl}-isophthalic acid;

5-(4-Hydroxy-3-methoxy-5-nitro-benzylidene)-2-thioxo-1-*p*-tolyl-dihydro-pyrimidine-4,6-dione;

1-(3,5-Dimethyl-phenyl)-5(4-hydroxy-3-methoxy-5-nitro-benzylidene) -pyrimidine-2,4,6-trione;

1-(4-Chloro-phenyl)-5-(4-hydroxy-3-methoxy-5-nitro-benzylidene)-2-thioxo-dihydro-pyrimidine-4,6-dione;

1-(4-Bromo-phenyl)-5-(4-hydroxy-3-nitro-benzylidene)-pyrimidine-2,4,6-trione;

5-(3-Chloro-4-hydroxy-5-methoxy-benzylidene)-1-(4-chloro-phenyl)-pyrimidine-2,4,6-trione;

5-(4-Diethylamino-2-methoxy-benzylidene)-2-thioxo-1-*o*-tolyl-dihydro-pyrimidine-4,6-dione;

5-{3-[1-(2-Fluoro-phenyl)-4,6-dioxo-2-thioxo-tetrahydro-pyrimidin-5-ylidenemethyl]-2,5-dimethyl-pyrrol-1-yl}-isophthalic acid; and

1-(5-Ethoxy-2-methoxy-phenyl)-5-(3-furan-2-yl-allylidene)-pyrimidine-2,4,6-trione;

or a stereoisomer, or pharmaceutically acceptable salt thereof.

14. A composition according to claim 13 wherein the compound is 5-(4-*tert*-Butyl-benzylidene)-3-(4-methyl-piperidin-1-ylmethyl)-2-thioxo-thiazolidin-4-one, or a stereoisomer, or pharmaceutically acceptable salt thereof.

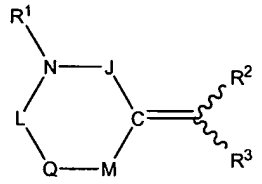
15. A compound according to claim 12 identified by combining a glycosyltransferase, a labeled substrate, and the compound, in a reaction vessel, under conditions known to be suitable for the glycosyltransferase to bind the labeled substrate,
measuring an amount of labeled substrate bound to the glycosyltransferase, and
comparing the amount to a standardized amount to identify a relative increase or decrease in substrate bound glycosyltransferase,
thereby identifying the compound that modulates the ability of the glycosyltransferase to bind the substrate.

16. A compound according to claim 15 wherein the glycosyltransferase is MurG.

17. A compound according to claim 16 wherein the labeled substrate comprises UDP-GlcNac.

18. A compound according to claim 16 that inhibits bacterial peptidoglycan synthesis.

19. A method of controlling proliferation of bacteria comprising applying an effective amount of a compound of Formula I or a stereoisomer, or pharmaceutically acceptable salt thereof, that inhibits the ability of a glycosyltransferase to bind a substrate, to a site where control of the proliferation of bacteria is needed



(I)

wherein:

J is selected from C=O, S, NH, C=S, CH_2, CH R^1, and C R^1R^1;

M is selected from C=O, S, C=S, CH R^1, and C R^1R^1;

L is selected from C=O, NH, C=S, S, CH R^1, CR^1R^1 CHR^2, CR^2R^2, =N-, -C(=NR^1)-, and –C(R^1)=;

Q is absent or selected from –NH-, and –NR^1;

R^1, is selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, F, Cl, Br, I, NO_2, CN, $(CH_2)_rOH$, $(CH_2)_rSH$, $(CH_2)_rOR^{1d}$, $(CH_2)_rSR^{1d}$, $(CH_2)_rNR^{1a}R^{1a'}$, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{1b}$, $(CH_2)_rC(O)NR^{1a}R^{1a'}$, $(CH_2)_rNR^{1a}C(O)R^{1a}$,

$(CH_2)_rNR^{1a}C(O)H$, $(CH_2)_rNR^{1a}C(O)NHR^{1a}$, $(CH_2)_rC(O)OR^{1b}$, $(CH_2)_rOC(O)R^{1b}$, $(CH_2)_rOC(O)NHR^{1a}$, $(CH_2)_rS(O)_2OH$, $(CH_2)_rS(O)_2NR^{1a}R^{1a'}$, $(CH_2)_rNR^{1a}S(O)_2R^{1b}$, C_{1-6} haloalkyl, a $(CH_2)_r$-C_{3-13} carbocyclic residue substituted with 0-5 R^{1c}, and a $(CH_2)_r$-5-10 membered heterocyclic system containing 1-4 heteroatoms selected from N, O, and S, substituted with 0-3 R^{1c};

R^{1a} and $R^{1a'}$, at each occurrence, are selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_r$-C_{3-10} carbocyclic residue substituted with 0-5 R^{1e}, and a $(CH_2)_r$-5-10 membered heterocyclic system containing 1-4 heteroatoms selected from N, O, and S, substituted with 0-3 R^{1e};

R^{1b}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, a $(CH_2)_r$-C_{3-6} carbocyclic residue substituted with 0-2 R^{1e}, and a $(CH_2)_r$-5-6 membered heterocyclic system containing 1-4 heteroatoms selected from N, O, and S, substituted with 0-3 R^{1e};

R^{1c}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, $(CF_2)_rCF_3$, NO_2, CN, $(CH_2)_rNR^{1f}R^{1f}$, $(CH_2)_rOH$, $(CH_2)_rOC_{1-4}$ alkyl, $(CH_2)_rSC_{1-4}$ alkyl, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{1b}$, $(CH_2)_rC(O)NR^{1f}R^{1f}$, $(CH_2)_rNR^{1f}C(O)R^{1a}$, $(CH_2)_rC(O)OC_{1-4}$ alkyl, $(CH_2)_rOC(O)R^{1b}$, $(CH_2)_rC(=NR^{1f})NR^{1f}R^{1f}$, $(CH_2)_rS(O)_pR^{1b}$, $(CH_2)_rNHC(=NR^{1f})NR^{1f}R^{1f}$, $(CH_2)_rS(O)_2NR^{1f}R^{1f}$, $(CH_2)_rNR^{1f}S(O)_2R^{1b}$, and $(CH_2)_r$phenyl substituted with 0-3 R^{1e};

R^{1d}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, a C_{3-10} carbocyclic residue substituted with 0-3 R^{1c}, and a 5-6 membered heterocyclic

system containing 1-4 heteroatoms selected from the group consisting of N, O, and S substituted with 0-3 R^{1c};

R^{1e}, at each occurrence, is selected from C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, F, Br, I, CN, NO_2, $(CF_2)_rCF_3$, $(CH_2)_rOC_{1-5}$ alkyl, OH, SH, $(CH_2)_rSC_{1-5}$ alkyl, $(CH_2)_rNR^{1f}R^{1f}$, and $(CH_2)_r$phenyl;

R^{1f}, at each occurrence, is selected from H, C_{1-6} alkyl, and C_{3-6} cycloalkyl;

R2 is selected from $(CH_2)_r$-C_{5-10} carbocyclic residue substituted with 0-7 R^{2a}, and a $(CH_2)_r$-5-10 membered heterocyclic system optionally containing C=O and 1-4 heteroatoms selected from N, O, and S, wherein the heterocyclic system is substituted with 0-7 R^{2a};

R^{2a}, at each occurrence, is selected from H, C_{1-6} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, $(CH_2)_rC_{3-6}$ cycloalkyl, Cl, Br, I, F, $(CF_2)_rCF_3$, NO_2, CN, $(CH_2)_rOH$, $(CH_2)_rOC_{1-4}$ alkyl, $(CH_2)_rSC_{1-4}$ alkyl, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)R^{9b}$, $(CH_2)_rC(O)NR^{1f}R^{1f}$ and $(CH_2)_r$phenyl wherein the phenyl on the $(CH_2)_r$ phenyl is substituted with 0-5 substituents selected from F, Cl, Br, I, NO_2, C_{1-6} alkyl, OH, $(CH_2)_rC(O)OH$, $(CH_2)_rC(O)OC_{1-4}$ alkyl, NR^{2b} R^{2b}, and $(CH_2)_rS(O)_2$ NR^{2b} R^{2b}.

R^{2b}, at each occurrence, is selected from H, C_{1-6} alkyl, and C_{3-6} cycloalkyl; and

R3 is selected from H;

alternatively R_2 and R_3 join to form a 5-10 membered heterocyclic system optionally containing C=O and 1-4 heteroatoms selected from N, O, and S, wherein the heterocyclic system is substituted with 0-7 R^{2a}.

20. A method, according to claim 19, of treating a bacterial infection, comprising administering an effective amount of the compound to a mammal.

* * *